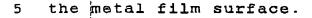
CLAIMS

- 1. A polishing solution for metal, comprising an
- 2 oxidizing agent, an oxidized-metal dissolving agent, a
- 3 first protective-film forming agent, a second
- 4 protective-film forming agent different from the first
- 5 protective-film forming agent, and water.
- 1 2. The polishing solution for metal according to
- 2 claim 1, wherein said first protective-film forming agent
- 3 is at least one selected from a group of ammonia, amines,
- 4 amino acids, imines, azoles, mercaptans and saccharides.
- 1 3. The polishing solution for metal according to
- 2 claim 2, wherein said first protective-film forming agent
- 3 is at least one selected from among benzotriazole and a
- 4 derivative thereof.
- 1 4. The polishing solution for metal according to
- 2 claim 1, wherein said first protective-film forming agent
- 3 is a compound capable of forming a protective film by
- 4 forming physical adsorption and/or chemical linkage on





- 1 5. The polishing solution for metal according to
- 2 claim 1, wherein said second protective-film forming
- 3 agent is compounds having an alcoholic or phenolic
 - 4 hydroxyl group, esters, ethers, polysaccharides, amino
- 5 acid salts, polycarboxylic acids, polycarboxylates,
 - 6 vinyl polymers, amides, azo compounds and molybdenum
 - 7 compounds.
- 6. The polishing solution for metal according to
- 2 claim 5, wherein said second protective-film forming
- 3 agent is at least one selected from a group of polyacrylic
- 4 acids, polymethacrylic acids, polyamic acids, ammonium
- 5 polyacrylates, ammonium polymethacrylates, ammonium
- 6 polyamides and polyacrylamides.
- 1 7. The polishing solution for metal according to
- 2 claim 1, wherein said second protective-film forming
- 3 agent is a compound which assists the first
- 4 protective-film forming agent in forming a protective
- 5 film.
- 1 8. The polishing solution for metal according to

- 2 claim 1, wherein said oxidizing agent is at least one
- 3 selected from a group of hydrogen peroxide, nitric acid,
- 4 potassium periodate, hypochlorous acid and ozone water.
- 9. The polishing solution for metal according to
- 2 claim 1, wherein said oxidized-metal dissolving agent is
- 3 at least one selected from a group of an organic acid,
- 4 an ammonium salt of an organic acid, and sulfuric acid.
- 1 10. The polishing solution for metal according to
- 2 claim 9, wherein said oxidized-metal dissolving agent is
- 3 at least one selected from a group of malic acid, tartaric
- 4 acid, citric acid, ammonium maliate, ammonium tartarate
- 5 and ammonium citrate.
- 1 11. A polishing solution for metal, having a
- 2 chemical mechanical polishing rate of 100 nm/minute or
- 3 higher and an etching rate of 10 nm/minute or lower.
- 1 12. The polishing solution for metal according to
- 2 claim 11, wherein said etching rate 1s 1 nm/minute or
- 3 lower.
- 1 13. The polishing solution for metal according to

- 2 claim 11, wherein said chemical mechanical polishing rate
- 3 is 250 nm/minute or higher.
- 1 14. The polishing solution for metal according to
- 2 any one of claims 11 to 13, which comprises an oxidizing
- 3 agent, an oxidized-metal dissolving agent, a first
- 4 protective-film forming agent, a second protective-film
- 5 forming agent different from the first protective-film
- 6 forming agent, and water.
- 1 15. A polishing solution for metal, comprising:
- a first protective-film forming agent which is a
- 3 compound capable of forming a protective film by forming
- 4 physical adsorption and/or chemical linkage on the metal
- 5 film surface; and
- a second protective-film forming agent which is a
- 7 compound which assists the first protective-film forming
- 8 agent in forming a protective film.
- 1 16. The polishing solution for metal according to
- 2 claim 1, 11 or 15, which is used to polish a metal
- 3 containing at least any one of copper, a copper alloy,
- 4 a copper oxide and a copper alloy oxide.





- 17. The polishing solution for metal according to 1
- claim 1. 11 or 13, which substantially does not contain 2
- 3 any abrasive grains.
- The polishing solution for metal according to 1
- claim 1, wherein said second protective-film forming 2
- 3 agent is a compound which enables the first
- protective-film forming agent to be added in a smaller 4
- quantity; the first protective-film forming agent being 5 ·
- necessary for controlling etching rate to 10 nm/minute 6
- or lower.
- 1 19. A polishing method comprising polishing a metal
- film formed on the surface of a polishing object, in the 2
- polishing solution for metal according to claim 1, 11 or 3
- 15 to remove the metal film.
- 1 The polishing method according to claim 19,
- 2 wherein said metal film contains at least any one of
- 3 copper, a copper alloy, a copper oxide and a copper alloy
- oxide.
- The polishing method according to claim 19, 1
- 2 wherein;

HC1467 said polishing object has a multi-layer film having 3 4 a metal layer containing at least any one of copper, a copper alloy, a cooper oxide and a copper alloy oxide; 5 6 said polishing method being a method of removing at least part of the metal film from the multi-layer film. 7

- 1 The polishing method according to claim 19, 2 wherein said polishing solution for metal substantially
 - does not contain any abrasive grains.